AMENDMENT

IN THE CLAIMS

Please amend the claims as follows:

1. (Original) A method for responding to electrical power source irregularities in an uninterruptible power supply system utilizing a rechargeable DC power supply as back up power, comprising:

providing an uninterruptible power supply system comprising a three phase AC source converter connectable to a three phase AC power source and a three phase AC load converter connectable to a three phase load, wherein the converters are interconnected by a DC bus;

monitoring DC bus voltage on the DC bus;

establishing a first DC bus voltage threshold indicative of a first power source irregularity and a second DC bus voltage threshold indicative of a second and distinct power source irregularity, wherein the first threshold is greater than the second threshold;

comparing the DC bus voltage to the first and second thresholds;

commuting electrical power from both the power source and from the DC power supply to the DC bus when the DC bus voltage is intermediate the first and second thresholds; and,

conversely commuting electrical power only from the DC power supply to the DC bus when the DC bus voltage is less than the second threshold, and disabling the source converter.

2. (Original) The method of claim 1, wherein the three phase AC power source is a public power grid.

3. (Original) The method of claim 2, wherein the first power source irregularity is a transitory power source instability and the second power source irregularity is a power source failure.

4. (Original) The method of claim 1, wherein the first power source irregularity is a transitory power source instability and the second power source irregularity is a power source failure.

5. (Original) The method of claim 1, further comprising establishing predetermined quality criteria for acceptable power source quality, monitoring power source voltage and current parameters for each phase on an input side of the source converter and commuting electrical power only from the DC power supply to the DC bus and disabling the source converter when the power source voltage fails to meet the predetermined quality criteria indicative of a power source failure.

6. (Original) The method of claim 5, further comprising monitoring instantaneous load voltage and current parameters for each phase on an output side of the load converter, calculating a load power demand value from the instantaneous parameters, and when a transient power source irregularity is indicated, generating a command signal to the DC power supply indicative of additional current needed by the load to supplant power lost from the AC power source due to the irregularity.

7. (Original) The method of claim 1, further comprising monitoring instantaneous load voltage and current parameters for each phase on an output side of the load converter, calculating a load power demand value from the instantaneous parameters, and when a transient power supply irregularity is indicated, generating a command signal to the DC power supply indicative of additional current needed by the load to supplant power lost from the AC power source due to the irregularity.

8. (Original) The method of claim 1, further comprising providing a plurality of rechargeable DC power supplies connected in parallel to each other and to the DC bus, and using power from each DC power supply sequentially when a power source irregularity is indicated.

9. (Original) The method of claim 1, wherein the first DC bus voltage threshold is approximately 710 Volts and the second DC bus voltage threshold is approximately 680 Volts.

10. (Currently Amended) An apparatus for responding to electrical power source irregularities in an uninterruptible power supply system comprising a rechargeable DC power supply interconnected to a DC bus, comprising:

an uninterruptible power supply system comprising a three phase AC source converter connectable to a three phase AC power source and a three phase AC load converter connectable to a three phase load, wherein the converters are interconnected by a DC bus;

means for monitoring DC bus voltage on the DC bus;

establishing means for establishing a first DC bus voltage threshold indicative of a first power source irregularity and a second DC bus voltage threshold indicative of a second and distinct power source irregularity, wherein the first threshold is greater than the second threshold;

comparing means for comparing the DC bus voltage to the first and second thresholds; and

commuting means for commuting electrical power from ~~both~~ at least one of the power source and ~~from~~ the DC power supply to the DC bus when the DC bus voltage is intermediate the first and second thresholds, and for conversely commuting electrical power only from the DC power supply to the DC bus when the DC bus voltage is less than the second threshold and for disabling the source converter.

11. (Original) The apparatus of claim 10, wherein the three phase AC power source is a public power grid.

12. (Original) The apparatus of claim 11, wherein the first power source irregularity is a transitory source instability and the second power source irregularity is a power source failure.

13. (Original) The apparatus of claim 10, wherein the first power source irregularity is a transitory power source instability and the second power source irregularity is a power source failure.

14. (Original) The apparatus of claim 10, further comprising grid failure establishing means for establishing predetermined quality criteria for acceptable power source quality, power source monitoring means for monitoring source voltage and current parameters for each phase on an input side of the source converter and power source failure commuting means for commuting electrical power only from the DC power supply to the DC bus and disabling the source converter when the source voltage fails to meet the predetermined quality criteria indicative of a power source failure.

15. (Original) The apparatus of claim 14, further comprising instantaneous monitoring means for monitoring instantaneous load voltage and current parameters for each phase on an output side of the load converter, load power calculating means for calculating a load power demand value from the instantaneous parameters, transient power supplying means for supplying power to the DC bus from the DC power supply when a transient power source irregularity is indicated, and command signal generating means for generating a command signal to the DC power supply indicative of additional current needed by the load to supplant power lost from the AC power source due to the irregularity.

16. (Original) The apparatus of claim 10, further comprising instantaneous monitoring means for monitoring instantaneous load voltage and current parameters for each phase on an output side of the load converter, load power calculating means for calculating a load power demand value from the instantaneous parameters, and command signal generating means for generating a command signal to the DC power supply indicative of additional current needed by the load to supplant power lost from the AC power source due to the irregularity.

17. (Original) The apparatus of claim 10, further comprising a plurality of rechargeable DC power supplies connected in parallel to each other and to the DC bus, and sequential DC power control means for using power from each DC power supply sequentially when a power source irregularity is indicated.

18. (Original) The apparatus of claim 10, wherein the first DC bus voltage threshold is approximately 710 Volts and the second DC bus voltage threshold is approximately 680 Volts.

19. (Original) A method for responding to electrical power source irregularities in an uninterruptible power supply system, comprising:

providing an uninterruptible power supply system comprising an AC source converter connectable to an AC power source and an AC load converter connectable to a load, wherein the converters are interconnected by a DC bus;

interconnecting a rechargeable DC power supply to the DC bus;

monitoring DC bus voltage on the DC bus;

establishing a first DC bus voltage threshold indicative of a first power source irregularity and a second DC bus voltage threshold indicative of a second and distinct power source irregularity, wherein the first threshold is greater than the second threshold;

comparing the DC bus voltage to the first and second thresholds;

commuting electrical power from both the power source and from the DC power supply to the DC bus when the DC bus voltage is intermediate the first and second thresholds; and,

conversely commuting electrical power only from the DC power supply to the DC bus when the DC bus voltage is less than the second threshold, and disabling the source converter.

20. (Original) The method of claim 19, further comprising establishing predetermined quality criteria for acceptable power source quality, monitoring power source voltage and current parameters for each phase on an input side of the source converter and commuting electrical power only from the DC power supply to the DC bus and disabling the source converter when the power source voltage fails to meet the predetermined quality criteria indicative of a power source failure.

21. (Previously Presented) An apparatus for responding to electrical power source irregularities in an uninterruptible power supply system comprising a rechargeable DC power supply interconnected to a DC bus, comprising:

an uninterruptible power supply system comprising a three phase AC source converter connectable to a three phase AC power source and a three phase AC load converter connectable to a three phase load, wherein the converters are interconnected by a DC bus;

a number of voltage sensors coupled to sense DC bus voltage on the DC bus;

a controller configured to compare the DC bus voltage to a first DC bus voltage threshold indicative of a first power source irregularity and a second DC bus voltage threshold indicative of a second and distinct power source irregularity, wherein the first threshold is greater than the second threshold; and further configured to provide control signals to at least one of the three phase AC source converter and the three phase AC load converter to commute electrical power from both the power source and from the DC power supply to the DC bus when the DC bus voltage is intermediate the first and second thresholds, and for conversely commuting electrical power only from the DC power supply to the DC bus when the DC bus voltage is less than the second threshold and for disabling the source converter.

22. (Original) The apparatus of claim 21, wherein the first power source irregularity is a transitory source instability and the second power source irregularity is a power source failure.

23. (Previously Presented) The apparatus of claim 21, further comprising:

a number of power source voltage sensors coupled to sense a source voltage for each phase on an input side of the source converter, and

a number of power source current sensors coupled to sense a source current for each phase the input side of the source converter, wherein the controller is further configured to commute electrical power only from the DC power supply to the DC bus and disabling the source converter when the source voltage fails to meet a predetermined quality criteria indicative of a power source failure.

24. (Currently Amended) The apparatus of claim 23, further comprising:

a number of voltage sensors coupled to instantaneously sense load voltage for each phase on an output side of the load converter,

a number of current sensors coupled to instantaneously sense load current for each phase on an output side of the load converter, wherein the controller is further configured to calculate a load power demand value from the instantaneous load voltage and the instantaneous load current,

a transient power switch selectively operable to couple the DC power supply to the DC bus to supply power from the DC power supply when a transient power source irregularity is indicated; wherein the controller is further configured to generate a command signal to the DC power supply indicative of additional current needed by the load to supplant power lost from the AC power source due to the irregularity.

25. (Original) The apparatus of claim 21, further comprising:

a plurality of rechargeable DC power supplies connected in parallel to each other and to the DC bus, wherein the controller is configured to use power from each DC power supply sequentially when a power source irregularity is indicated.